

REMARKS

The Examiner is thanked for the due consideration given the application. This amendment is being filed concurrently with a Request for Continued Examination. The specification has been amended to insert headings and to improve the language.

Claims 1-3, 5, 6, 10-12, 15-18 and 20-25 are pending in the application. By this amendment claims 4 and 19 are canceled. Support for the amendments to independent claims 1 and 16 can be found in, e.g., Figure 2. The other claims have been amended to improve their language in a non-narrowing fashion.

No new matter is believed to be added to the application by this amendment.

The Drawings

The drawings are objected to as not showing every feature specified in the claims, i.e., a measurement gas container.

As is set forth in 35 USC § 113, applicant shall furnish a drawing where necessary for understanding of the subject matter sought to be patented. In this case, one of ordinary skill would understand a measurement gas container sufficient to practice the invention without recourse to a drawing figure.

It is accordingly respectfully requested that this objection to the drawings be withdrawn.

Rejections Under 35 USC §103(a)

Claims 1-6, 11, 12 and 15 have been rejected under 35 USC §103(a) as being unpatentable over KESTEN (DE 10107895 A1, as evidenced by U.S. Publication 2008/0016884) in view of WELZ (U.S. Patent 6,726,241) in further view of WOLFF et al. (U.S. Patent 4,715,786). Claim 10 has been rejected under 35 USC §103(a) as being unpatentable over KESTEN in view of WOLFF in further view of KENEAVY (U.S. Patent 4,922,973). Claims 16-21 and 23-25 have been rejected under 35 USC §103(a) as being unpatentable over KESTEN in view of WELZ in further view of BASTIAN (U.S. Patent 5,900,538). Claim 22 has been rejected under 35 USC §103(a) as being unpatentable over KESTEN in view of BASTIAN, in further view of KENEAVY and in further view of PSAROS (U.S. Patent 6,032,665). These rejections are respectfully traversed.

The present invention pertains to a method for filling a pressure vessel of an air bag that is illustrated, by way of example, in Figure 1 of the application, which is reproduced below.

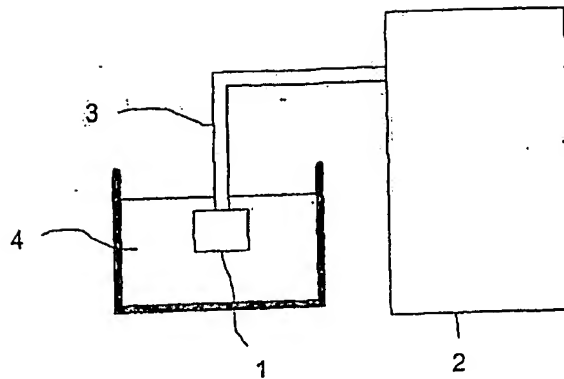


Figure 1 shows a pressure vessel 1 which is to be filled, a compressed-gas source 2, e.g., a compressed-gas cylinder containing helium or hydrogen with shut-off valve and pressure reducer, a gas connecting conduit 3 and a refrigeration or cooling bath 4 containing a cryogenically liquefied gas, such as liquid nitrogen, as refrigerant. The pressure vessel 1 is, for example, part of a gas generator of an airbag system or a gas canister. Also, the filling quantity is determined manometrically.

The present invention is further illustrated by Figure 2 of the application, which is reproduced below.

Fig. 2

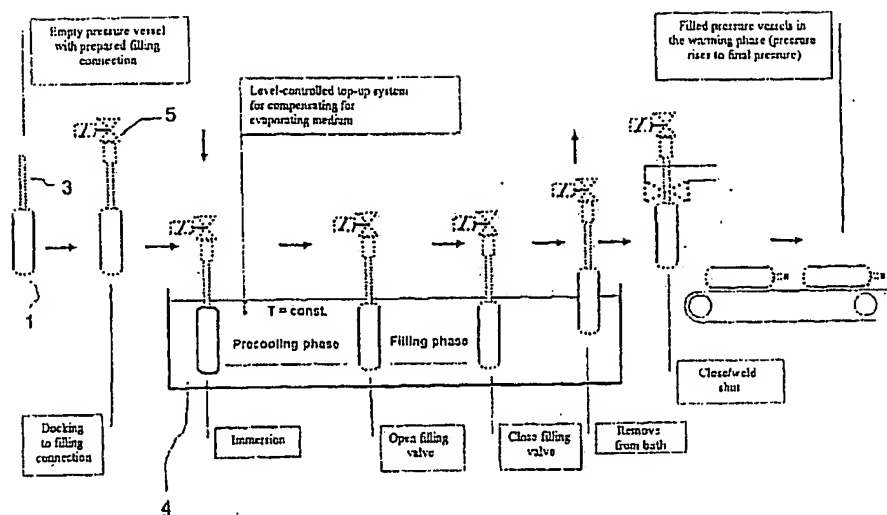


Figure 2 shows the pressure vessel moving through the cooling bath to undergo precooling and filling phases. After removal of the pressure vessel from the cooling bath, the gas is warmed or allowed to warm.

Claim 1 of the present invention recites: "introducing a gas mixture . . . into a cooled compressed-gas container, while the compressed-gas container is moving through a cooling bath," and "determination and monitoring of the filling quantity during the filling of the compressed-gas container with the cryogenically liquefied gas or a cryogenically liquefied gas mixture are carried out gravimetrically or volumetrically." Independent claim 16 reflects these limitations except that determination and monitoring of the filling quantity during operation takes place manometrically.

KESTEN (as evidenced by U.S. Publication 2008/0016884) pertains to a method for filling pressure containers with gas. Figure 1 of KESTEN is reproduced below.

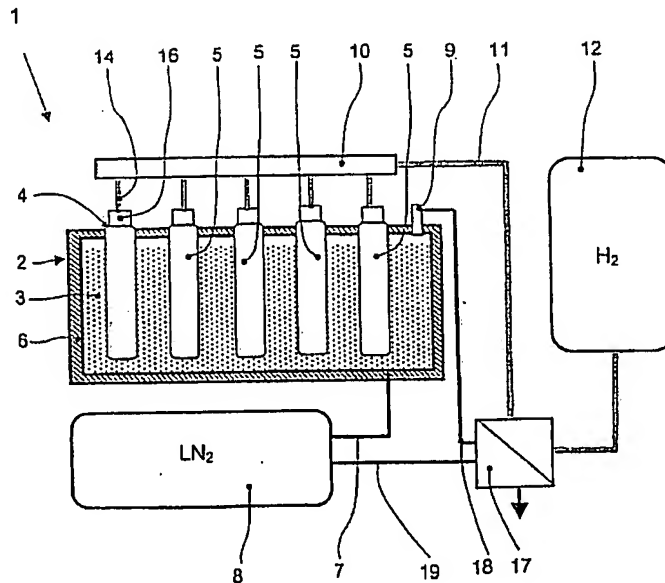


Fig. 1

Figure 1 of KESTEN shows pressure tanks 5 immersed in a coolant bath 2. However, there is no teaching or suggestion in KESTEN that the pressure tanks 5 move through the coolant bath 2 during filling. Rather, paragraph 0023 of KESTEN teaches that the pressure tanks 5 are fixed in place at the feed openings 4 of the coolant bath.

In contrast, claim 1 (and similarly independent claim 16) of the present invention recites: "introducing a gas mixture . . . into a cooled compressed-gas container, while the compressed-gas container is moving through a cooling bath."

The secondary references fail to address this deficiency of KESTEN.

Regarding independent claim 16, KESTEN also fails to disclose manometric determination of filling quantity. The Official Action acknowledges this failure of KESTEN at page 6, lines 7-11.

The Official Action then refers to column 12, line 13 of BASTIAN, which states: "Actual pressure is measured by a manometric capsule". BASTIAN thus only teaches manometric pressure measurement.

BASTIAN fails to teach or suggest manometric determination of fill quantity. Nonetheless, the Official Action asserts that manometric determination of fill quantity would be obvious to one of ordinary skill in the art.

However, the production of airbag gas generators for vehicles requires a mass production at very low prices. At the same time, the system should contain an exactly defined reproducible quantity of gas and should be stable for decades.

All this was not necessary in the cited prior art, and a skilled person would fail to recognize which methods and conditions can be used for the high pressure filling of an airbag gas generator with an exactly reproducible amount of gas, especially by determining and monitoring of the filling quantity during the filling operation manometrically (monitoring the pressure), which nevertheless requires to keep

all gases to be filled into the pressure vessel above the boiling temperature to avoid any measurement errors.

It should also be noted that an airbag gas generator must release the gas in case of an accident within a reproducible very short period of time, which requires certain valves (again stable for decades) that may require a filling and closing at lower pressure than the final pressure in the vessel. This can be done with the present method as the vessel is closed before warming.

There is no teaching or suggestion in the prior art, how to solve all these problems at the same time.

As a result, one of ordinary skill and creativity would fail to produce a claimed embodiment of the present invention from a knowledge of KESTEN and the secondary references. A prima facie case of unpatentability has thus not been made.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Double Patenting Rejection

Claims 1 and 12 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 3 of copending application no. 10/471,926 in view of WOLFF. This rejection is respectfully traversed.

A terminal disclaimer of copending application no. 10/471,926 is being filed concurrent with this paper, thereby removing the copending application as prior art to the present invention.

Withdrawal of this double patenting rejection is accordingly respectfully requested.

Conclusion

The rejections are believed to have been overcome, obviated, or rendered moot, and no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Charge the statutory disclaimer fee of \$140 for the Terminal Disclaimer filed herewith, to our credit card.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any

additional fees required under 37 C.F.R. § 1.16 or under 37
C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following item:

☒ - a terminal disclaimer